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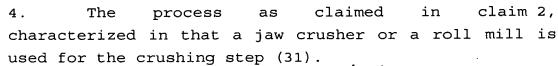
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Claims

A process for manufacturing $(U, Pu) O_2$ mixed oxide nuclear fuel pellets,

- comprising:
- * dosing and first blending (1) of PuO_2 and/or UO_2 powders and/or fuel manufacturing scrap;
- * micronization (2) and forced sieving (3) of this
 10 first blend;
 - * additional dosing and second blending (4) of the first blend thus treated, UO_2 and possibly scrap;
 - * addition and blending of lubricants and/or poreformers (5), separately or in combination with the second blending step (4);
 - * pelletizing (6) of the second blend; and
 - * sintering (7) of the pellets thus formed; and
 furthermore comprising, for at least one
 portion of the UO₂ powders:
- 20 * selection of non-free-flowing UO2; and
 - * mechanical granulation treatment (29) of the UO_2 so as to make it free-flowing, before the UO_2 is used as granules in at least said second blending operation.
- claimed in claim 1, 25 2. The process as for said characterized in that it comprises, granulation treatment:
 - * compression (30) of the nonflowing UO_2 into tablets at a pressure greater than that used for the usual UO_2 granulation;
 - crushing (31) of the tablets obtained, until a flowing crushed material has been formed; and
 - * use of at least one portion of this flowing crushed material for said second blending operation (4).
 - 3. The process as claimed in claim 2, characterized in that the compression (30) is carried out at a pressure of between 40 and 200 MPa.



- The process as claimed in any one of claims 1 5. to 4, characterized in that it furthermore comprises particle size selection by sieving (32) granulated UO2 before it is used.
- as claimed process The in characterized in that the granulated UO2 is separated, by the sieving (32), into at least two fractions of different particle sizes, the finest fraction possibly being introduced into the aforementioned first blending other operation (1) whereas the fraction incorporated into the second blending operation (4).
- claimed in 15 7. The process as characterized in that it comprises, in order to carry out said granulation of the non-free-flowing UO2, operation to force the latter through a screen or sieve, the amount of additive(s), the mesh size of the screen or sieve and the pressure exerted on the powder 20 all being adjusted so as to form granules having the appropriate properties.
 - The process as claimed in any one of claims 1 to 7, characterized in that, for said granulation of the non-free-flowing UO2, a lubricant is added to it.
 - The process as claimed in any one of claims 1 to 8, characterized in that, for said granulation of the non-free-flowing UO_2 , /a binder is added to it.
- The process as claimed/in any one of claims 1 to 9, characterized in that the sintering (7) of the 30 fuel pellets in an atmosphere of argon and hydrogen is carried out at a temperature between 1600 and 1760°C, the argon possibly being replaced with nitrogen.
- The process as claimed in any one of claims 1 to 10, characterized in that, during the sintering (7), the oxygen part al pressure is adjusted, preferably by adjusting the $\frac{1}{4}$ / H_2O /ratio in the flushing gas, in order improve the interdiffusion of the PuO2 and UO2 oxides.